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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,663	10/11/2000	Jay A. Alexander	10961066-1	4949

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EXAMINER	
WEST, JEFFREY R	

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/686,663	ALEXANDER, JAY A.	
	Examiner	Art Unit	
	Jeffrey R. West	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29,44-49 and 51-65* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29,44-49 and 51-65* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 9, 11, 22, 24, 25, and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,222,028 to LaBarre et al.

LaBarre discloses a pulse analysis/management system, including an oscilloscope (column 6, lines 54-58) that obtains a time-varying analog pulse signal (column 3, lines 67-68), digitizes and stores the samples in an acquisition memory during a single acquisition (column 7, lines 7-16 and 24-29) and automatically/without operator involvement provides measured characteristics of each of the previously stored plurality of pulses for storage in a searchable data storage array (column 9, lines 44-52) using positive and negative pulse time indications (column 11, lines 33-38). LaBarre also discloses a transition calculator that determines transition signal levels and times at each of one or more transition percentages, wherein each percentage is a percentage of a difference between two signal levels (top and base) having a logical interpretation for comparison (column 9, line 52 to column 10, line 9 and column 12, lines 60-66).

LaBarre also discloses that the measured characteristics stored in a searchable data storage array comprise results of pulse measurements taken of each of the plurality of pulses (i.e. voltage) (column 4, lines 34-49) as well as pulse measurement statistics comprising results of statistical analyses (i.e. mean) of at least one of the pulse measurements (i.e. DC offset) (column 7, line 61 to column 8, line 6).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-6, 8-11, 14-17, 19-22, 24-28, 44, 49, 52-57, and 59-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,003,248 to Johnson in view of U.S. Patent No. 5,495,168 to de Vries.

Johnson discloses a probability density histogram display for use as a pulse management system including a digital oscilloscope that obtains an analog time-varying pulse signal, buffers and applies the signal to a sampling bridge that samples the input signal in a single acquisition and measures a voltage characteristic of each of the pulses in series before passing the voltage value to a holding circuit and an ADC that digitizes the voltage levels and stores the digitized voltage samples in a memory with each sample

uniquely identified by a single digital word identifier (column 3, lines 19-31). Johnson then discloses a means for automatically (without user involvement) using the previously obtained/stored values to form a histogram (column 3, lines 31-37) of a distribution of the number of occurrences that the acquired signal is obtained over a specified time range (column 1, lines 63-68).

Johnson discloses a means for determining one or more modes of the histogram that has a logical interpretation (i.e. digital values stored in the memory indicating the number of occurrences) indicating which signal levels occur most frequently in the histogram (column 4, lines 17-24).

Johnson discloses a transition calculator/data analyzer for determining/measuring the transition signal levels and times at one or more transition percentages, including base and top levels of the pulses, at user-defined and/or 10%, 50%, and 90% levels (column 1, lines 34-45, column 2, line 42, and column 4, lines 24-30) through a user interface (column 3, lines 13-15). Johnson also discloses that the memory holding the voltage values is searchable in that the values are searched to determine if a particular amplitude meets a predetermined threshold percentage wherein if the predetermined threshold is reached, the amplitude occurrence is displayed (column 4, lines 34-44).

Johnson also discloses using the method to analyze, and store data from, a plurality of input channels each with corresponding graphs of user-selected pulse waveforms on a single display (column 3, lines 51-54). Figure 4 of Johnson discloses a sine wave in a time-domain having two signal levels

producing a corresponding histogram with two peaks "200A" (i.e. bimodal). Further, since the invention of Johnson teaches displaying a plurality of data graphs corresponding to a plurality of input sources, wherein the histogram display for each source is optional (abstract) it is considered inherent that the source must provide some type of indication to indicate to the processing system memory that the histogram is to be calculated and displayed. Johnson also discloses displaying the results of the predetermined and operator defined statistical mode, probability value, and percentage measurements (i.e. operator defined distal and proximal percentage levels) (column 2, line 42 and column 4, lines 17-44).

With respect to claim 17, the limitation requiring that the acquired signal be an alternative mark inversion communication signal that transitions between three signal values, is considered to be an intended use limitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). In the instant case, the structure of Johnson is capable of analyzing an alternative mark inversion communication input signal. Therefore, as understood by one having ordinary skill in the art, and admitted by Applicant on page 27, lines 29-30, the mode finder of Johnson would identify all the modes of the histogram corresponding to the acquired

signal, such as three modes for an alternative mark inversions signal. Further, it is considered well known that that an alternate mark inversion signal transitions between three signal values (see the supplied definition AMI).

With respect to claims 52 and 57, Johnson also discloses storing the pulse data as a single digital word data unit in a buffer/database/array (column 3, lines 38-50), having use in implementing oscilloscope applications, wherein the single data unit uniquely identifies each pulse of the acquired signal, the measured amplitude of the pulse, as well as the corresponding time of occurrence with respect to the other pulses indicating the time corresponding to when a (rising-edge) trigger event caused the storage of the signal (column 5, lines 21-30).

With respect to claims 60-62 and 64, the pulse data and digital word identifiers are automatically stored in a sequential order of occurrence in the buffer in response to the initial sampling and conversion of the input signal (column 3, lines 38-50).

As noted above, the invention of Johnson teaches many of the features of the claimed invention and while Johnson does teach performing and storing measurements on a plurality of samples it does not explicitly store the sampled data in an acquisition memory before performing pulse measurements for storage in a second memory. Johnson also does teach determining the excursions of the measured data in the histogram but does not explicitly store results of global statistical analysis of the measurements.

De Vries teaches a method of signal analysis employing histograms to establish stable, scaled displays in oscilloscopes by obtaining a time-varying input signal, sampling the and storing the samples in an acquisition memory during a single acquisition (column 2, lines 53-67), generating a plurality of user-predetermined pulse measurements (i.e. amplitudes) of the samples (column 3, lines 9-14 and 35-40) and stores the pulse measurements in a second searchable memory (column 3, lines 1-4) in addition to global pulse measurement statistics (i.e. global max and min) comprising the results of statistical analysis of at least one of the pulse measurements (column 3, lines 51-53).

It would have been obvious to one having ordinary skill in the art to modify the invention of Johnson to include storing the sampled data in an acquisition memory before performing pulse measurements for storage in a second memory, as taught by de Vries, because the invention of Johnson does supply the input signal to buffering and holding circuitry and does disclose a functionally equivalent method for forming a histogram based upon a plurality of previously-acquired pulse measurements thereby allowing the formation of a histogram that provides the number of occurrences of each of a plurality of pulse amplitudes obtained over a time-interval, and, as suggested by de Vries, the combination would have improved efficiency of the acquisition process and allowed for global analysis of the samples once they have all been received by allowing continuous storage of the samples as they are received and subsequent analysis (column 2, line 64 to column 3, line 4).

Further, while the invention of Johnson teaches initial sampling and pulse voltage measurement in one processing structure rather than separate structures, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide this processing step using separate structures (i.e. sampling the input data for storage in a first acquisition memory, followed by measuring the voltage values of the pulse samples for storage in a second searchable memory) since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art (see Nerwin v. Erlichman, 168 USPQ 177, 179).

It also would have been obvious to one having ordinary skill in the art to modify the invention of Johnson to include storing results of global statistical analysis of the measurements, as taught by de Vries, because Johnson does disclose determining maximum excursions and de Vries suggests that the combination would have provided a means for determining maximums as well as for improving the operation of the oscilloscope by performing attenuation or gain setting adjustments (column 3, lines 53-67) and for determining the necessary values for calculating the transition levels (column 4, lines 1-9) such as the transition levels of Johnson.

5. Claims 7, 23, 29, 45-48, 51, and 58 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view de Vries and further in view of U.S. Patent No. 3,656,060 to Bauernfeind et al.

As noted above, the invention of Johnson and de Vries teaches all the features of the claimed invention except for specifying that the type of pulses (i.e. positive or negative) be inputted before processing.

Bauernfeind teaches a time interval measuring and accumulating device, such as an oscilloscope (column 1, lines 7-9), wherein the user of the oscilloscope specifies the input pulses as either positive or negative pulses before pulse processing occurs (column 2, lines 45-47).

It would have been obvious to one having ordinary skill in the art to modify the invention of Johnson and de Vries to include specifying that the type pulse (i.e. positive or negative) be inputted before processing because Johnson does teach sampling the input data based upon a rising edge of each pulse of the sample clock, and Bauernfeind suggests that the combination would have insured correct counting of a plurality of pulses, such as counting the occurrences of pulses for use in the histogram of Johnson and de Vries, by defining the initialization of the count to occur on the leading or trailing edge as required, as well as allowed for proper triggering and detection of the pulses as known in the art (column 1, lines 30-60).

6. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view de Vries and further in view of U.S. Patent No. 4,721,958 to Jenkin.

As noted above, the invention of Johnson and de Vries teaches many of the features of the claimed invention including storing, in memory, pulse data

with corresponding amplitudes and a number of occurrences of each signal obtained in order to form a histogram, but does not specify that the data be stored in a table.

Jenkin teaches a real-time pulse processor including a counter for counting the occurrences of a particular pulse amplitude (column 16, line 58 to column 17, line 20) and stores the number of occurrences in a table to create a corresponding histogram (column 17, lines 21-26).

It would have been obvious to one having ordinary skill in the art to modify the invention of Johnson and de Vries to include specifying that the pulse data be stored in a table, as taught by Jenkin, because the combination would have provided a method, functionally equivalent to the buffer method of Johnson and de Vries for storing the pulse data using a easily accessible and organized structure as is well-known in the art.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view de Vries and further in view of U.S. Patent No. 5,410,617 to Kidd et al.

As noted above, the invention of Johnson and de Vries teaches all the features of the claimed invention except for including a smoothing function to identify any of the one or more modes of the histogram.

Kidd teaches a method for adaptively thresholding grayscale image data by obtaining the image data and mapping the data in a histogram, using a

look-up table, and incorporating a smoothing function (column 8, lines 37-54) to find peaks in the histogram (column 9, lines 13-15).

It would have been obvious to one having ordinary skill in the art to modify the invention of Johnson and de Vries to include a smoothing function to identify any of the one or more modes of the histogram, as taught by Kidd, because Johnson and de Vries does teach that the peaks of the histogram correspond to the modes of the histogram and Kidd suggests that the combination would have provided better peak/mode detection by removing very small peaks and rapid excursions in the histogram (column 8, lines 64-65).

Response to Arguments

8. Applicant's arguments filed September 30, 2004, have been fully considered but they are not persuasive.

Applicant first argues that the invention of LaBarre does not teach all of the features of claim 1 because while LaBarre does teaches the determination and storing of a DC offset, "the DC Offset of the composite signal is a measurement of a single pulse. (See, LaBarre, col. 4, lns. 34-49 and Table 2.) The Examiner cites language that refers to a rolling average being measured as part of determining the DC offset. This, however, is nothing more than the measurements taken to determine the baseline value of the signal so that the appropriate change in the signal can be detected as a leading edge of the pulse. In other words, for a portion of the signal to be

determined as a pulse, it must be 'both tall enough and wide enough. . . ' (See, LaBarre, col. 7, ln. 61 to col. 8, ln 4.) This and similar operations are performed by Applicant's, LaBarre's and other systems to detect the baseline of a signal, the top and base voltages of each pulse, etc. . . Thus, such intermediate values are used to generate the pulse measurements, whereas Applicant's claimed measurements are '... of at least one of said pulse measurements ...' That is, such values of the sampled signal are used to determine pulses and pulse measurements, they are not operations performed on the resulting pulse measurements as claimed. Therefore, Applicant respectfully asserts that storing pulse measurement results and pulse measurement statistics for later use as recited in Applicant's claim 1 are nowhere disclosed, taught nor suggested in LaBarre."

The Examiner asserts that while Applicant indicates that Applicant's claimed measurements are "... of at least one of said pulse measurements ...", claim 1 actually recites "the pulse management system generates and stores in a searchable data structure pulse characteristics comprising . . . pulse measurement statistics comprising the results of statistical analyses of at least one of said pulse measurements".

Therefore, since LaBarre discloses a pulse management system that generates and stores in a searchable data structure pulse characteristics including a DC offset (column 4, lines 35-46) wherein "[t]o determine the dc offset, a rolling average of the sample is taken up to the point where the leading edge is first detected" (column 7, lines 61-63) and "[t]he final value of

the rolling average (at the time the leading edge is detected) provides the dc offset or baseline value" (column 8, lines 3-6), LaBarre does disclose that the dc offset is a pulse measurement statistic comprising the results of statistical analyses of at least one of said pulse measurements.

Applicant then argues that the combination of Johnson and de Vries fails to teach the claimed invention because "[n]either Johnson nor de Vries disclose, teach or suggest '... a pulse management system [that] generates and stores in a searchable data structure...pulse measurement statistics comprising the results of statistical analyses of at least one of said pulse measurements.' Thus, even if the references were to be combined, the resulting system would not contain all the features of Applicant's invention without substantial modifications being made to the resulting system."

The Examiner maintains that, as noted in the previous Office Action, the invention of de Vries teaches the storage of pulse measurements in a second searchable memory ("the digitized samples may be processed as digital data by a system mircoprocessor or CPU 22 and transferred to a system memory 24, from which such digital data may be reconstructed for display") (column 3, lines 1-4) in addition to global pulse measurement statistics (i.e. global max and min) comprising the results of statistical analysis of at least one of the pulse measurements ("[f]rom the amplitude histogram, the minimum (MIN) and maximum (MAX) amplitude values of the waveform are quickly discerned, and the two values are stored") (column 3, lines 51-53).

Therefore, the Examiner maintains that the combination of Johnson and de Vries does disclose storing "results of statistical analyses of at least one of said pulse measurements".

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent No. 6,418,386 to Wong-Lam et al. teaches high and low voltage measurement in waveform analysis and teaches well-known max-min and histogram methods.

http://www.erg.abdn.ac.uk/users/gorry/course/phy-pages/ami.html provides the definition of "alternate mark inversion"

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

jrw
December 21, 2004